

ABSTRACT OF THE DISCLOSURE

[40] A wireless electromagnetic tracking system using a nonlinear passive transponder is provided. The transponder employs a coil connected in parallel with a diode. The transponder emits a response signal when an excitation signal is incident upon the coil of the transponder. Inclusion of the diode in the transponder circuit introduces nonlinear characteristics into the waveform of the response signal emitted by the transponder. The nonlinear characteristics can be varied by changing the capacitance level of the transponder circuit. The nonlinear characteristics of the response signal can be used to discern the response signal from the excitation signal when both signals are received at a receiver. The nonlinear characteristics can also be utilized in a system of encoding data that is to be transmitted from a transponder to a receiver.